

Regional Director
for Environmental Protection
in Wrocław
WOOS.4204.2.2013.LCK.24

[stamp:
Sweco Hydroprojekt Kraków Sp. z o.o.
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Wrocław, March 13th, 2015

DECISION

Under Article 71 Par. 2 Subpar. 1, Article 75 Par. 1 Subpar. 1i as well as Article 82 and Article 85 of the Act of October 3rd, 2008 *on the Provision of Information on the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessments* (Journal of Laws of 2013, item 1235 as amended) in connection with Article 104 § 1 of the Law of 14 June 1960 – *Code of Administrative Procedure* (Journal of Laws of 2013, item 267 as amended) as well as § 2 Par. 1 Subpar. 36 of the Regulation of the Council of Ministers of November 9th, 2010 *on determining the types of projects which may significantly affect the environment* (Journal of Laws No. 213, item 1397 as amended), after considering the application of the Director of the Regional Water Management Authority in Wrocław, submitted on June 24th, 2013 (an application of June 20th, 2013, ref. No.: HK-2362/42/1267/13) by an Attorney, Mr. Marcin Balicki, supplemented on July 17th, 2013, concerning issuing a final decision on the environmental conditions and defining the scope of the environmental impact report for the undertaking entitled: **“Construction of “Krosnowice” – a dry flood control reservoir on Duna stream near Krosnowice, Kłodzko Municipality in the Lower Silesian Province”**, the Investor of which is the Regional Water Management authority in Wrocław,

I determine

the environmental conditions for the undertaking entitled: “Construction of “Krosnowice” – a dry flood control reservoir on Duna stream near Krosnowice, Kłodzko Municipality in the Lower Silesian Province”, according to scenario 3 – the most favourable one to the environment.

I. I define:

1. The type and location of the undertaking:

The subject of the undertaking is the construction of “Krosnowice” dry flood control reservoir located on Duna stream near Krosnowice, Kłodzko Municipality, Kłodzko district, Lower Silesian Province. The Duna stream is a left-hand side tributary of the Nysa Kłodzka river. The dam cross-section of the reservoir was adopted at chainage km 1+375 of Duna stream, approx. 50 m downstream of the place where Duna Dolna and Duna Górna (Topolica) streams meet. In administrative terms, the investment is located in Krosnowice and Starków, within the boundaries of Kłodzko Municipality.

2. Area use conditions during undertaking implementation, with special consideration for the need to protect valuable environmental qualities, natural resources and monuments and to limit disruptions to the adjacent areas:

- 2.1 The works shall be performed in the daytime.
- 2.2 The removal of trees and shrubs in the reservoir basin shall be performed only in the zone characterized by $Q_p=10\%$ flooding probability and in places where the planned facilities (the dam, new beds, bank trims) are going to be constructed.
- 2.3 The removal of trees and shrubs shall be performed from August 15th to March 15th.
- 2.4 The removal of trees with the circumference at breast height exceeding 40 cm shall be performed under the supervision of a chiropterologist, who shall inspect the trees in terms of bat presence before the removal. If bat presence is confirmed, the chiropterologist shall indicate the permissible period and manner of performing the removal.
- 2.5 The stubbing of roots of removed trees and shrubs growing on the stream bed slopes shall be performed beyond the period lasting from March 1st to May 30th (the optimum period is from June 1st to August 30th).
- 2.6 The boundaries of the following natural habitats: riparian mixed forests of willow, poplar, alder and ash tree (code: *91E0) and Galio-Carpinetum and Tilio-Carpinetum oak-hornbeam forests (code: 9170), border of which in the area anticipated for works performance, shall be marked on site with a phytosociologist's participation in a manner visible to works contractors. This shall be done before commencing the works. Do not locate construction site backyards or access roads nor store materials within the boundaries of habitat swathes anticipated for retaining.
- 2.7 The earthworks in the area of root clumps of trees and shrubs anticipated for retaining shall be performed manually.
- 2.8 Tree trunks present within the works corridor or in the immediate vicinity of the works and therefore exposed to mechanical damage shall be protected against damage at least to a height of 1.5 m above ground level.
- 2.9 Do not store materials or mark new transport routes within the tree crown projection area or within 1 m from shrubs.
- 2.10 The works related to topsoil removal shall be performed in the period from August 15th to March 15th.
- 2.11 The top layer of soil shall be collected before commencing the works and stored in heaps near the works corridor. Until the soil is used again to regenerate the locations from which it was taken or the neighbouring locations, it shall be maintained in an appropriate humidity (sprinkled as necessary) and temperature (protected against freezing, e.g. by using straw mats).
- 2.12 Excavations and other places which might constitute traps for animals shall be inspected at least once a day. Any animals found there shall be immediately caught and released beyond the investment area. The last inspection of animal presence in the excavations shall be performed directly before backfilling the excavations or filling them with construction materials.
- 2.13 Delivery of materials and traffic of vehicles serving the investment shall use in the first

place the existing public, forest and dirt roads. If it becomes necessary to perform an additional access road to the investment area, it shall be routed along the shortest section possible, running beyond the boundaries of the habitats mentioned in clause I.2.6. The road shall be covered with temporary pavements made of slabs or boards, which shall be removed after works completion.

- 2.14 Temporary roads in the reservoir basin shall be liquidated immediately after works completion.
- 2.15 It is forbidden to run wheeled vehicles in the stream and to move earth, gravel and stone masses by pushing the material in the watercourse bed. It is inadmissible to route access roads in the watercourse bed – the equipment shall enter from the banks.
- 2.16 Do not collect stones, gravels or other materials constituting the bottom material of Duna, Duna Góna and Duna Dolna watercourse beds.
- 2.17 Do not perform works in watercourse beds in the period from March 1st to May 30th. The works shall be maximally reduced in the period from September 1st to the end of February.
- 2.18 The works in watercourse beds shall be performed under an ichthyologist's supervision (during works performance, the visits shall take place no rarer than once in 3 days).
- 2.19 The works in the watercourses shall be performed section by section, beginning with the sections located in the upper parts of the watercourses. All works in the beds shall be performed on one side at a time, preserving the hydrological continuity of the watercourses also during low water levels. Appropriate depths for fish fauna living shall be maintained as indicated by an ichthyologist. Moreover, watercourse waters shall be protected against contamination by separating them from the works performance site (e.g. using a cofferdam made of a local material or running the waters through a pipeline).
- 2.20 Fish fauna behaviour shall be constantly observed on the section downstream of the performed works. The inspections shall be conducted by an ichthyologist no rarer than once in 3 days on the section of up to 500 m downstream of the works performance site. If it is noticed that the fish are dying, the works shall be interrupted immediately and the ichthyologist's directions shall be absolutely followed.
- 2.21 Suspension concentration in Duna stream shall be controlled in a spot located 1 km downstream of the works performance site. The control shall take place every 14 days or more frequently. If suspension concentration exceeds 40 mg/l, the works shall be interrupted for a period indicated by the ichthyologist.
- 2.22 Storage sites for bulk materials and production sites of construction materials (concrete mixes, prefabricated units, aggregates etc.) shall be located no closer than 100 m from the existing watercourse beds.
- 2.23 After works completion, the area shall be cleared and practices supporting the restoration of green areas shall be performed, including sowing with the use of native species complying with habitat conditions. The species for sowing shall be selected in cooperation with a botanist.
- 2.24 The first transfer of waters through the constructed dam and the constructed stream

bed section shall be performed in the period from June 1st to the end of February (the optimum period is from June 1st to August 31st).

- 2.25 The rubble catcher shall be performed in such a way as to create a varied bank line and give the upstream embankments (except the part adjacent to the stream bed) a gentle inclination of 1:5, thus enabling the formation of several-metre wide shallow areas in the bank zone and their occupation by plant species.
- 2.26 Information about the arrangements concerning the manner and scope of performing the measures referred to in clause I.2.4, I.2.6 and I.2.8 as well as documents confirming the participation of specialists (e.g. a protocol of the arrangements and/or a statement of the specialist confirming appropriate measure performance) shall be submitted to the Regional Director for Environmental Protection in Wrocław within 30 days of making and/or implementing the arrangements.
- 2.27 The construction site backyard and an access road to the construction site backyard shall be completed before commencing the construction stage. The construction site backyard shall be used to store construction materials, park and fill up machinery, perform running repairs of machines and devices as well as place staff and common use facilities (changing rooms, office, portable toilets) and waste containers.
- 2.28 The construction site backyard area to be used by machines and cars shall be insulated from the soil. Every day, after completion of works, and in particular on non-working days, machines and cars shall be parked in a designated area within the construction site backyard.
- 2.29 The Contractor is obliged to regularly remove the dirt formed on the roads in connection with the traffic of cars and machines related to the implementation of the designed investment.
- 2.30 A part of the construction site backyard area designated for parking and filling up machines shall be insulated from the substrate.
- 2.31 The construction site backyard shall be located away from the reach of flood waters characterized by $Q_p=0.2\%$ flooding probability.
- 2.32 The technical state of the working construction and transport machines shall be checked regularly to eliminate leaks of hydrocarbon petroleum derivatives into the substrate.
- 2.33 In the event of any breakdown in the scope of contamination with petroleum derivatives, the ground contaminated as a result of the breakdown shall be removed immediately.
- 2.34 A station with a sorbent used to eliminate any leaks and spillages of petroleum derivatives should be located near the machinery parking and filling up site.
- 2.35 The construction site backyard shall be equipped with tight domestic waste-water holding tanks, the content of which shall be handed over to entities with appropriate permits to manage it.
- 2.36 The drainage duration times shall be as short as possible and one shall apply methods limiting the quantity of the water pumped out and protecting it against contamination.
- 2.37 Only means of transport in working order and devices with certified low sound emission shall be used. Defective devices which might cause increased noise levels in

the surroundings shall be eliminated from the works.

- 2.38 During the course of construction works, one shall limit the consequences of secondary dust contamination by observing high standards of works and in particular by systematic clearance of the construction site, sprinkling dusty road surfaces and removal of contamination using mechanical devices (special purpose vehicles). In the places where heavy equipment exits the construction site, one shall install stations for preliminary cleaning of vehicle wheels by removing the ground and mud which might constitute a source of unorganized dust emission from road surfaces.
- 2.39 Waste generated during the implementation of the investment shall be segregated and selectively stored in containers or in designated and suitably adjusted locations, in conditions which prevent dust emission and prevent the wind picking up light fractions resulting in a negative environmental impact. One shall also ensure regular waste collection by entities authorised to manage it further.
- 2.40 Hazardous waste shall be segregated and stored separately in designated containers placed on hardened ground, secured against unauthorised access until handed over to entities authorised to manage such waste further.

3. Environmental protection requirements necessary during the undertaking operation stage:

- 3.1 The water shall be held in the reservoir for no longer than 5 days (120 hours) or, in emergency situations, 14 days (336 hours).
- 3.2 The minimum acceptable flow downstream of the dam shall be maintained on the level of at least $Q=0.195 \text{ m}^3/\text{s}$.
- 3.3 The rock rubble shall be removed from the rubble catcher no rarer than once in 5 years.
- 3.4 The maintenance works in the reservoir basin shall be performed beyond the period lasting from April 1st to May 15th.
- 3.5 The maintenance works in the rubble catcher shall be performed under ichthyological supervision.
- 3.6 The sluice device shall be cleaned regularly (no rarer than once a year), with special consideration for the flow-differentiating sills and the fish migration slots in those sills.
- 3.7 The dumps in the area of the stilling basin outlet from the tailwater side and in the area of the sluice device inlet from the headwater side shall be mechanically removed.
- 3.8 The areas located within the dry reservoir to which the Investor has a legal title shall be used as a pasture or hay meadows. It is recommended to perform mowing annually (in any case, no rarer than once in 2 years) in the period from September 1st to September 30th. 5-10% of the meadow surface area shall be left unmowed (each time in a different location) and the biomass shall be disposed.
- 3.9 Using the rubble catcher for angling purposes is forbidden.
- 3.10 Investment lighting shall be limited only to the dam crest and body, the manoeuvring site at the bottom sluice inlet, the car park next to the backyard building, the road along the dam crest and the road connecting the dam with the backyard building. One

shall apply lighting fixtures with reflectors reducing light spreading beyond the area anticipated to be lit.

- 3.11 Information about the arrangements concerning the manner and scope of performing the measures referred to in clause I.3.5 as well as documents confirming the participation of specialists (e.g. a protocol of the arrangements and/or a statement of the specialist confirming appropriate measure performance) shall be submitted to the Regional Director for Environmental Protection in Wrocław within 30 days of making and/or implementing the arrangements.

4. Environmental protection requirements necessary to be taken into account in the documentation for issuing the decision referred to in Article 72 Par. 1 of the Act on the Provision of Information on the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessments:

- 4.1 The minimum acceptable flow on Duna stream shall be maintained on the level of at least 0.195 m³/s.
- 4.2 A series of permanent sills shall be performed in the sluice channel bottom. The sills shall be 0.3 m high, positioned at right angles to the current and equipped with a 0.3 m wide slot. The slots in the neighbouring baffles shall be located opposite.
- 4.3 The sluice device outlet shall lead directly to the stilling basin (i.e. without sills). The stilling basin outlet shall be located on a level equal or as close as possible to the stream bottom level.
- 4.4 The slots of the trusses at the sluice device water inlet from the headwater side should be no smaller than 0.5 m.
- 4.5 Concerning the sections where the old bed shall be retained, do not interfere with the watercourse bottom, do not change the watercourse bed width and limit the reinforcements only to trims made of crushed stone on concave banks (the trims shall be laid on geotextile to a maximum height of 2 m).
- 4.6 Do not reinforce the bottom on the sections where the new bed shall be performed (this does not concern the 40 m section in front of the sluices).
- 4.7 Earth masses not built into the dam shall be used to grade the area.
- 4.8 The area from which the earth masses are obtained shall be backfilled after works completion.

II. I find:

1. Environmental compensation to be necessary:

- 1.1 Tree and shrub species characteristic for habitats *91E0 and 9170 shall be planted before investment implementation completion to compensate for the removal of trees and shrubs in connection with investment implementation. The planting shall be performed in the location(s) with appropriate habitat conditions confirmed by a phytosociologist, with a total surface area of at least 7 ha. The planted species composition should be approved by a phytosociologist.
- 1.2 At least 2 nest boxes adjusted to the requirements of Grey wagtail *Motacilla cinerea* shall be hung under an ornithologist's supervision in a location approved by an ornithologist as an appropriate one for the abovementioned species, in the upper part of Duna watercourse (beyond the tree and shrub removal area).

1.3 After completing the undertaking construction stage, 50 nest boxes for bats shall be hung in the investment area and its neighbourhood (within up to 1 km from the undertaking) in early spring. The boxes shall be hung in groups of 6-8 boxes each. The detailed location and model of the boxes should take into account the requirements of individual bat species. A chiropterologist should control if the location and model of the boxes comply with bat requirements. The chiropterologist should also directly supervise their hanging as well as their maintenance at the investment operation stage. Box maintenance shall be limited to repairs consisting in improving the tightness and supplementing the missing elements (do not use any chemical agents for the maintenance) as well as cleaning the faeces off the boxes. If any box is more seriously damaged or destroyed, it shall be replaced with a new one. Inspection of the boxes shall begin one year after hanging them and be conducted once a year, in the period from the end of July to the end of August, for at least 5 years.

2. The need to monitor the environmental impact of the undertaking:

2.1 Directly after completing dam construction and in the trout spawning period, one shall check the effectiveness of the devices supporting animal migration in terms of fish fauna movement upstream and downstream in the watercourse. The control shall be conducted with the participation of an ichthyology specialist. If their defective functioning causing fish fauna migration difficulties is established, their operation shall be improved immediately.

2.2 The methodology of performing the measures consisting in checking the effectiveness of the devices supporting fish migration referred to in clause II.2.1 shall be submitted to the Regional Director for Environmental Protection in Wrocław for approval no later than 60 days before the planned monitoring commencement date.

2.3 The monitoring results shall be submitted annually to the Regional Director for Environmental Protection in Wrocław till January 31st of each year following the year of conducting the observation.

III. I do not impose an obligation to conduct an Environmental Impact Assessment within the scope of the proceedings concerning issuing the decisions referred to in Article 72 Par. 1 of the Act on the Provision of Information on the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessments.

IV. The Appendix constituting undertaking characterization is an integral part of the decision.

JUSTIFICATION

Mr. Marcin Balicki, acting for and on behalf of the Director of the Regional Water Management Authority in Wrocław, submitted an application of June 20th, 2013, ref. No.: HK-2362/42/1267/13 (received on June 24th, 2013), to the Regional Director for Environmental Protection in Wrocław for issuing a decision on the environmental conditions for the undertaking entitled: **“Construction of “Krosnowice” – a dry flood control reservoir on Duna stream near Krosnowice, Klodzko Municipality in the Lower Silesian Province”**

and for defining the scope of the environmental impact report under Article 69 Par. 1 of the Act of October 3rd, 2008 *on the Provision of Information on the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessments*, hereinafter referred to as the EPA Act. The application was supplemented in the formal scope on July 17th, 2013 (a letter of July 15th, 2013, ref. No.: HK-2362/52/1482/13). The information contained in the application was made more detailed in a letter of July 17th, 2013 (ref. No.: HK-2362/54/1522/13).

The application indicated that the undertakings which might have a significant impact on the environment and were covered by the application included:

- a dam as a flood protection facility and a damming structure with the damming height exceeding 5 m,
- deforestation with a surface area exceeding 1 ha, deforestation aimed at changing the manner of area use concerning forests which constitute an enclave among farmlands and deforestation aimed at changing the manner of area use concerning riparian forests,
- service roads with a hard pavement due to the length exceeding 1 km,
- 110 kV power line reconstruction.

After analysing the submitted documents, the Regional Director for Environmental Protection in Wrocław sent a letter with ref. No. WOOŚ.4204.2.2013.ŁCK.1, in which, under Article 64 § 2 of the *Code of Administrative Procedure*, it requested application supplementation, indicating the personal and subject matter competence of the body issuing the decisions on the environmental conditions under Article 75 Par. 1 Subpar. 1i of the EPA Act for all tasks covered by the application, and demanded the submission of land register maps as well as a written extract and a graphic extract from the local spatial management plan for the undertakings covered by the application which fell within its competence but were not listed in the Act of July 8th, 2010 *on specific terms of preparing for implementation of projects in the scope of flood protection facilities* (Journal of Laws No. 143, item 963 as amended) and simultaneously were not facilities functionally connected with the project. Moreover, the body applied for making the graphic appendix more detailed in the scope of the municipalities within the investment impact range. In a letter of July 15th, 2013 (received on July 17th, 2013) with ref. No. HK-2362/52/1482/13, made more detailed in a letter of July 17th, 2013 (ref. No.: HK-2362/54/1522/1), the applicant indicated that all tasks covered by the application would be implemented according to the EPA Act. The roads with a hard pavement listed in the application shall be facilities functionally connected with the undertaking and shall be used for operating the designed “Krosnowice” dry reservoir. The personal and subject matter competence of the Regional Director for Environmental Protection in Wrocław concerning issuing a decision on the environmental conditions under Article 75 Par. 1 Subpar. 1i of the EPA Act for the task covering the removal of trees and shrubs was justified with the provisions of Article 29 Par. 1 of the Act *on specific terms of preparing for implementation of projects in the scope of flood protection facilities*, indicating that, according to the cited regulation, “provisions concerning protection of agricultural and forest lands do not apply to the agricultural and forest lands covered by an investment project implementation permit”.

In a letter of July 17th, 2013, the applicant excluded the reconstruction of a 110 kV power line from the application for issuing the decision on the environmental conditions.

On August 2nd, 2013, the Regional Director for Environmental Protection in Wrocław issued a decision with ref. No. WOOS.4204.2.2013.ŁCK.4, in which it defined the scope of the environmental impact report.

Pursuant to the statutory disposition of Article 69 Par. 4 of the EPA Act, via a decision of August 6th, 2013 with ref. No. WOOS.4204.2.2013.ŁCK.5, the body suspended the proceedings concerning issuing a decision on the environmental conditions for the undertaking in question until the submission of an environmental impact report for the undertaking by the applicant. A study entitled: “Construction of “Krosnowice” – a dry flood control reservoir on Duna stream near Krosnowice, Kłodzko Municipality in the Lower Silesian Province. An environmental study. An environmental impact report for the undertaking”, developed under the management of Eng. Jacek Bonenberg PhD, (July 2014), hereinafter referred to as “the Report”, was submitted on August 6th, 2014 together with a letter of August 5th, 2014 (ref. No.: HK-2362/156/1540/14, and therefore the proceeding suspension causes ceased.

In a decision of August 11th, 2014 (ref. No.: WOOS.4204.2.2013.ŁCK.7, the body resumed ex officio the proceedings concerning issuing a decision on the environmental conditions.

In a letter of September 1st, 2014 (ref. No.: WOOS.4204.2.2013.ŁCK.11), the present body requested the applicant to supplement the evidence i.a. in the scope of: a detailed characterization of the undertaking, its impacts and cumulative impacts, the minimizing and compensation measures concerning the negative impacts as well as the methodology; submission of graphic appendices in the scope of works with marked fauna and flora inventory, the scope of tree removal and a more detailed assessment of the undertaking influence on the environmental objectives in the planning boundaries within which the project is implemented and on which it exerts impact; as well as exclusion of earth mass collection from the application.

The material was supplemented via a letter of November 14th, 2014 (ref. No.: HK-2362/177/2338/14). In that supplementation, the applicant cited the Law of 9 June 2011 – Geological and mining law (Journal of Laws of 2014, item 613 as amended), indicating that the planned earth mass management was not mineral extraction for the purposes of gaining economic benefits, but only the earth mass movement onto the dam body embankment. In the course of the conducted proceedings concerning issuing a decision on the environmental conditions for the undertaking entitled: “Construction of “Szalejów Górny” – a dry flood control reservoir on Bystrzyca Dusznicka River” (an analogous situation), the body sought an opinion of the Director of the Geology Department in the Office of the Lower Silesian Marshal. In a letter of November 14th, 2014 (ref. No.: WOOS.4233.8.2013.ŁCK.24), the body asked the Director of the Geology Department in the Office of the Lower Silesian Marshal if obtaining minerals from the investment area and using them to implement the investment constituted an extraction and therefore required a permit. In its reply, the body indicated that the planned works would not consist in mineral extraction from a documented deposit defined in Article 6 Par. 1 Subpar. 19 of the Geological and mining law as a natural accumulation of minerals, rocks and other substances the extraction of which may bring an economic benefit because they would only consist in earth mass movement in connection with the performed construction works. Taking into consideration the above and the fact that all the earth masses would be managed in the investment area, the body indicated that the implementation of the undertaking

in question did not require obtaining a permit concerning mineral extraction from a deposit.

The subject of the assessment is the construction of a dry flood control reservoir. The planned reservoir, due to its small volume (the maximum reservoir volume is approx. 1.92 M m³), qualifies as an undertaking which might have a potential significant impact on the environment. Reservoirs which might always have a significant impact on the environment, referred to in § 2 Par. 1 Subpar. 35 of the Regulation of the Council of Ministers of November 9th, 2010 *on determining the types of projects which may significantly affect the environment*, hereinafter referred to as the EPA Regulation, include reservoirs intended for permanent storage or holding of at least 10 M m³ of a new or additional water volume, i.e. those with a volume five times bigger. The earth-fill dam implemented within the scope of the planned undertaking, with a periodic water damming of max. 15.7 m, in accordance with § 2 Par. 1 Subpar. 36 of the EPA Regulation, qualifies as an undertaking which might always have a significant impact on the environment.

The planned undertaking is a project in the scope of flood protection facilities as defined by the Law of 08 July 2010 *on specific terms of preparing for implementation of projects in the scope of flood protection facilities* (Journal of Laws No. 143, item 963 as amended). Pursuant to the statutory disposition of Article 75 Par. 1 Subpar. 1i of the EPA Act, the relevant body for issuing the decision on the environmental conditions is the Regional Director for Environmental Protection in Wrocław.

The parties to the proceedings were identified by the body on the basis of the information contained in the application as well as land survey and height maps and maps for design purposes, with the investment scope and impact zones marked, attached to the application. The parties include: the applicant as well as owners, holders of perpetual usufruct rights and administrators of real properties within the investment area and its impact zone, including the case of a serious breakdown. In the administrative proceedings in question the number of parties exceeds 20. In connection with the above, and pursuant to the statutory disposition of Article 74 Par. 3 of the EPA Act, the body has informed the parties to the proceedings regarding all actions of the public administration bodies pursuant to the principle set forth in Article 49 of the *Code of Administrative Procedure* by announcements. The announcements were placed for 14 days on the notice boards in the seats of: the Kłodzko Municipality Office, the Kłodzko City Office, the Bardo City and Municipality Office and the Regional Directorate for Environmental Protection in Wrocław, as well as in the Bulletin of Public Information on the website of the Regional Directorate for Environmental Protection in Wrocław: wroclaw.rdos.gov.pl.

In a notice of July 23rd, 2013 (ref. No.: WOOŚ.4204.4.2013.ŁCK.2) and an announcement of July 23rd, 2013 (ref. No.: WOOŚ.4204.2.2013.ŁCK.3), the body informed the applicant's attorney and the remaining parties to the proceedings about instituting the proceedings concerning issuing the decision on the environmental conditions for the abovementioned undertaking.

Pursuant to Article 21 of the EPA Act, the information on: the application, the decision about the report scope and the submitted report was put on a publicly available list of data on the documents containing information about the environment and its protection, under their respective numbers: 833/2013, 834/2013, 866/2014.

Pursuant to the statutory disposition of Article 77 Par. 1 Subpar. 2 in connection with Article 78

Par. 1 Subpar. 2 in connection with Article 75 Par. 1 Subpar. 1i of the EPA Act, the Regional Director for Environmental Protection in Wrocław applied to the National District Sanitary Inspector in Kłodzko for an opinion before issuing a decision on the environmental conditions, informing the parties to the proceedings of that fact in an announcement of December 11th, 2014 (ref. No.: WOOŚ.4204.1.2013.LCK.16). The planned reservoir is not intended for permanent storage or holding of at least 10 M m³ of a new or additional water volume, so the provision of Article 75 Par. 1 Subpar. 1a fifth indent and of Article 78 Par. 1 Subpar. 1a fifth indent of the EPA Act does not apply. It should also be pointed out that Directive 2011/92/EU of the European Parliament and of the Council of December 13th, 2011 on the assessment of the effects of certain public and private projects on the environment transposed to the EPA Regulation states that undertakings which are subject to an Environmental Impact Assessment (listed in Annex No. 1) include dams and other devices intended for holding or permanent storage of water if new or additional volumes of held or stored waters exceed 10 M m³. In Annex 1, the Directive does not take into account reservoirs with smaller holding capacities, constructed in connection with the implementation of a damming structure more than 5 m high, such as is the case here. Therefore, the National District Sanitary Inspector in Kłodzko was the relevant body to issue an opinion before issuing the present decision.

The National District Sanitary Inspector in Kłodzko issued a decision of January 14th, 2015 (received on January 20th, 2015) with ref. No. NS-ZNS-711-07/WB/14, in which it approved the investment implementation conditions in terms of hygienic and health requirements, subject to the following reservations:

1. technical and organizational solutions have to be anticipated at the design and implementation stages of the undertaking in question so as to ensure that all activities related to investment implementation and its further operation cause no disruptions to the areas of protected buildings,
2. when the reservoir basin is filled with stream waters due to freshets at the reservoir operation stage, one shall inspect the substrate status and the dam structure in terms of the possibility of a leak of the waters held in the reservoir.

The conditions were not imposed in the sentence of this decision because the fundamental aim of obtaining a decision on the environmental conditions is defining the undertaking implementation conditions which protect the interests of the environment in the widest scope possible and reconciling them with the interests favouring undertaking implementation. The condition defined in clause 1 should indicate the measures that the Investor should take to prevent investment implementation and its further operation from exceeding the limit of disruptions to the areas of protected buildings. The body did not impose that condition in an identical wording in the sentence of this decision, but the conditions formulated by the present body fulfil the requirement of limiting the disruptions to building areas. The body also reckons that the condition defined in item 2 stems from the law, not from the provisions of a decision on the environmental conditions.

Under Article 79 Par. 1 of the EPA Act, the Regional Director for Environmental Protection in Wrocław, on the basis of Article 33 of the cited Act, by an announcement of December 11th, 2014 (ref. No.: WOOŚ.4204.2.2013.LCK.17), published information about the planned undertaking, i.e. about:

- the commencement of conducting an Environmental Impact Assessment for the undertaking in question,
- instituting the proceedings,
- the subject of the decision to be issued on this matter,
- the relevant body to issue the decision and the relevant body to issue the opinion,
- the opportunity to review the necessary documentation of the case and the location where it is made available for review,
- the possibility of submitting remarks and motions,
- the manner and location for submitting remarks and motions, at the same time setting out a 21-day deadline for submitting them,
- the relevant body to consider remarks and motions.

In the announcement, the body indicated that the proceedings to issue a decision on the environmental conditions for the undertaking in question were conducted for the Regional Water Management Authority in Wrocław, on behalf of which Mr. Marcin Balicki is acting. It also clarified that the relevant body to issue a decision on the environmental conditions for the planned undertaking which might always have a significant impact on the environment, under Article 75 Par. 1 Subpar. 1i of the EPA Act, was the Regional Director for Environmental Protection in Wrocław. Moreover, it announced that it had applied to the National District Sanitary Inspector in Kłodzko for an opinion before issuing the decision (as the relevant body in the case). Additionally, it indicated that anyone might review the entire documentation collected for the case since the day of displaying the announcement publicly, in the seat of the Regional Directorate for Environmental Protection in Wrocław at 1. Powstańców Warszawy Square, room No. 3018, from 7:30 am. to 3:30 pm. It announced the opportunity to submit, between December 18th, 2014 and January 7th, 2015 (incl.), remarks and motions pertaining to the planned undertaking in writing to the abovementioned address, verbally for the record or using electronic means of communication without the need to apply a safe electronic signature as referred to in the *Electronic Signature Act* of September 18th, 2001 (Journal of Laws of 2013, item 262 as amended). It clarified that the Regional Director for Environmental Protection in Wrocław was the relevant body to consider such remarks and motions, as indicated in the abovementioned announcement. The society was informed that remarks and motions submitted after the designated deadline would not be considered.

Based on Article 3 Par. 1 Subpar. 11 of the EPA Act, the information on the planned undertaking was published through:

- publication on a notice board in the seat of the body relevant in the case, i.e. the Regional Directorate for Environmental Protection in Wrocław,
- publication of the information on the website of the Bulletin of Public Information of the Regional Directorate for Environmental Protection in Wrocław (www.wroclaw.rdos.gov.pl),
- notification of the planned undertaking by an announcement in a manner customarily adopted at the implementation site of the planned undertaking by placing announcements on the notice boards of: the Kłodzko Municipality Office, the Kłodzko City Office and the Bardo City and Municipality Office as well as in the BPI of the Bardo City and Municipality Office,

- publication in the press – in the Lower Silesian extra to *Gazeta Wyborcza*.

On December 17th, 2014, the announcement was published in the Lower Silesian extra to *Gazeta Wyborcza*. The announcement was put on the notice boards of the abovementioned Offices and in the BPI of the Regional Directorate for Environmental Protection in Wrocław between December 17th, 2014 and January 7th, 2015 (incl.).

No remarks or motions were submitted to the proceedings within the defined deadline.

The residents of Krosnowice village submitted remarks and motions concerning the undertaking in question after the expiration of the defined deadline.

The applicants touched upon the issue of the lack of public consultations by the Investor, i.e. RZGW in Wrocław. They mentioned that the need to construct the reservoir and perform amelioration works on site in the Nysa Kłodzka river (the main source of flooding risk) had been the main subject of a meeting organized with the participation of the media in 2013, at which the Applicant had been absent. They also applied for the possibility of arranging a meeting at a date set by the Regional Director for Environmental Protection in Wrocław. One of the persons submitting the remarks also put forward a motion for preparing a botanical and an ornithological expert report as well as appointing independent experts in the fields of mammals, fish, reptiles and amphibians with the participation of the Regional Director for Environmental Protection.

In reply to the submitted remarks, the Regional Director for Environmental Protection in Wrocław sent a letter of February 4th, 2015 with ref. No. WOOŚ.4204.2.2013.ŁCK.21, in which it explained that the information about the pending proceedings had been published via an announcement of December 11th, 2014 (ref. No.: WOOŚ.4204.2.2013.ŁCK.17). It clarified that the body had informed the public via that announcement about the commencement of conducting an Environmental Impact Assessment for the undertaking in question, the manner and possibility of reviewing the relevant documentation of the case and the place of displaying it for review, the possibility, manner and place of submitting remarks and motions and the relevant body to consider remarks and motions. It highlighted that no remarks or motions had been submitted within the defined deadline. Referring to the remark concerning setting a meeting date, the body stressed that Article 73 § 1 of the *Code of Administrative Procedure* gave the parties to the proceedings and their attorneys the right to review the case documentation and take notes or extracts at every stage of the proceedings. It clarified that all information about the taken and planned flood protection measures in the municipality in question should be provided by the authorities of that municipality, the Regional Water Management Authority in Wrocław and the Board of Amelioration and Hydraulic Structures (especially concerning the issues related to amelioration works and construction/reconstruction and modernization of flood protection embankments). Referring to the request for preparing a botanical and an ornithological expert report in order to confirm the plant species existing there, including protected ones (e.g. Autumn crocus, Snowdrop, True oxlip, Lesser butterfly-orchid, Feather grass, Garden angelica, Spring snowflake), and animal species (e.g. White wagtail, Black woodpecker, Song thrush, Corncrake, Whinchat, Black stork, Common wood pigeon), for appointing independent experts in the fields of mammals, fish, reptiles and amphibians with the participation of the Regional Directorate for Environmental Protection in Wrocław and for considering the influence of the planned works on protected species and their

balance in the natural environment, breeding and living, the body informed the parties that the environmental impact report for the undertaking, submitted on August 6th, 2014, analysed the impact of the planned investment on the environment, including natural environment (plant and animal species, natural habitats, migration corridors). The body explained that the Report had been prepared by specialists in many fields (environmental engineering, ornithology, ichthyology, technical physics, chiropterology, herpetology, mammalogy, phytosociology) and it confirmed the presence of a part of the species indicated by the persons submitting the remarks, i.e. Autumn crocus, True oxlip, Spring snowflake, White wagtail *Motacilla alba*, Song thrush *Turdus philomelos*, Corncrake *Crex crex*, Whinchat *Saxicola rubetra*, Black stork *Ciconia nigra* and Common wood pigeon. It highlighted that the study in question had been analysed by the employees of the Regional Directorate for Environmental Protection in Wrocław and served as the basis for assessing the impact of the planned investment on the natural environment. It remarked that, based on the above, the decision on the environmental conditions would impose conditions that the Investor would have to meet at the investment design, implementation and operation stages in order to reduce the impact of that investment on the environment as much as possible. It stressed that, according to the provisions of Article 75 of the *Environmental Protection Law* of April 27th, 2001 (Journal of Laws of 2013, item 1232 as amended), the Investor was obliged to take environmental protection into consideration in the works performance area, in particular the protection of soil, greenery, natural land configuration and water regime. During the performance of construction works, it is allowed to use and transform natural elements only in the scope necessary in relation to the implementation of a given investment. It mentioned that, in the event of collisions of the planned works with the sites of the abovementioned protected plant or animal species to which bans were related, the Investor was obliged to obtain a separate permit for prohibited activities in relation to those species from a relevant body before the commencement of works and, in the event of obtaining such a permit, to perform the works with consideration for the conditions stemming from the permit.

Based on the above, it concluded that, in its opinion, the implementation of the investment in question would not disturb the balance in the natural environment or influence in a significant way the breeding and living of the abovementioned plant and animal species, provided that the conditions imposed by the present body in the decision on the environmental conditions and the conditions stemming from the binding legal regulation were taken into account.

Pursuant to the principle defined in Article 10 § 1 of the *Code of Administrative Procedure*, the Regional Director for Environmental Protection in Wrocław, by a notice of February 11th, 2015 (ref. No.: WOOŚ.4204.2.2013.ŁCK.22) and an announcement of February 11th, 2015 (ref. No.: WOOŚ.4204.2.2013.ŁCK.23), informed the parties to the proceedings that a complete set of evidence had been collected for the proceedings to issue a decision on the environmental conditions for the undertaking in question and that there was a possibility of submitting remarks on the collected evidence and the reported demands.

Before issuing the present decision on the environmental conditions, no party submitted remarks or motions to the proceedings within the above deadline.

Within the scope of the conducted administrative proceedings on the Environmental Impact Assessment, a set of documentation compliant with Article 74 Par. 1 of the EPA Act was

submitted for consideration.

3 undertaking scenarios were analysed at the undertaking stage:

- Scenario 1 – a scenario suggested by the applicant, i.e. the performance of a dry reservoir with a maximum flood volume of 1.92 M m^3 and a water damming elevation of up to 321.6 m AMSL together with removal of trees in the entire reservoir basin area. A period which interferes the most with the environment is the construction period related to the construction of a head dam, the local regulation of a stream and the removal of trees in the entire reservoir basin area. The operation period does not, as a rule, interfere with the biotic or abiotic nature. The partial change (for high flows) of the natural water runoff conditions in Duna stream downstream of the dam is a negative element. The period of partial retention of the flood wave is extended by several to several dozen hours (depending on the probability of occurrence of the flood wave). A dam breakdown may cause fundamental damage to the environment as it might produce significant results both for the nature and the local community. Dam and reservoir liquidation also interferes with the environment, although with a smaller intensity than does the reservoir construction period.
- Scenario 2 – a reasonable alternative scenario, i.e. the performance of a reservoir with a permanent damming level at an elevation of approx. 318.1 m above ground level and a volume of 0.765 M m^3 and the performance of an additional flood reserve with a volume of approx. 1.15 M m^3 and a damming level of 321.6 m AMSL, together with removal of trees in the entire reservoir basin area. A period which interferes the most with the environment, as in the scenario suggested by the applicant, is the construction period related to the construction of a head dam, the local regulation of a stream and the removal of trees in the entire reservoir basin area. The ecosystem shall change from flowing waters to standing waters. The operation period interferes with the biotic and abiotic nature to an insignificant extent, but fish fauna is an exception here because investment implementation is related to interrupting the migration corridor along Duna stream in the upstream direction of the watercourse. The possibility of the reservoir basin use by migrating birds is a positive element. Tourism shall intensify due to permanent damming by (filling of) the reservoir allowing for its use for recreational purposes. The change of the natural water runoff conditions in Duna stream downstream of the dam is a negative element. A dam breakdown may cause fundamental damage to the environment as it might produce more significant results both for the nature and the local community in the case of permanent damming than in the case of a dry reservoir. Dam and reservoir liquidation also interferes with the environment, although with a smaller intensity than does the reservoir construction period.
- Scenario 3 – the most favourable scenario to the environment (with the preservation of the main aim – flood protection of the Duna stream valley downstream of the dam and the Nysa Kłodzka Valley), i.e. the construction of a dry reservoir with a maximum flood volume of 1.92 M m^3 and a water damming elevation of up to 321.6 m AMSL, with the removal of trees in the reservoir basin limited to the area of the reservoir dam together with its related elements, river regulation locations and locations with $Q=10\%$

flooding probability; the scenario includes measures minimizing the negative impacts. An area of approx. 5.1 ha (i.e. approx. 51% less than in scenario 1) shall undergo greenery stubbing. The impacts of this scenario are similar to those of the scenario suggested by the applicant, though scenario 1 includes a reduced pressure on the flora and fauna in the reservoir area during the construction period. The operation period does not, as a rule, interfere with the biotic or abiotic nature (as in scenario 1). The increase of flood protection safety for the local community must be treated as an advantageous (positive) element. The partial change (for high flows) of the natural water runoff conditions in Duna stream downstream of the dam is a negative element (analogous to that in scenario 1). A dam breakdown may cause fundamental damage to the environment as it might produce significant results both for the nature and the local community. Dam and reservoir liquidation also interferes with the environment, although with a smaller intensity than does the reservoir construction period.

The applicant suggested investment implementation according to the most favourable scenario to the environment, with limited removal of trees and with a range of minimizing and compensation measures concerning the negative impact of the undertaking, which were imposed in the sentence of this decision. The analysis of the scenarios and their impact on the environment presented in the Report unequivocally shows that the best solution is the scenario consisting in the implementation of a dry reservoir with the smallest possible scope of tree removal. A superior objective of the planned reservoir is flood protection. Permanently damming reservoirs (i.e. those with a flood contingency) dam water in a permanent way, unlike dry reservoirs. Permanent damming has an unfavourable effect on the reduction capacities of such reservoirs, decreasing the volume of flood water which can be held in the reservoir basin. A permanently damming reservoir fulfils several functions simultaneously (water supply, recreational purposes, flood protection purposes). In the case of the discussed undertaking, such versatility is unjustified: the primary problem to solve in the Kłodzko Valley is the problem of floods. The flooding of a dry reservoir is a certain event in time, after which the reservoir is emptied quickly and natural states (flows) return. This minimizes the scope of impacts on the geological environment (erosion and abrasion phenomena). In the case of a wet reservoir, the pressure on the geological environment is permanent (reservoir sloshing). The scenario consisting in the implementation of a dry reservoir with the maximal and minimal scope of tree removal is identical in many situations. Nonetheless, a limited scope of tree removal means the preservation of a part of the area offering better living conditions for all species. A tree removal performed only in a limited scope should contribute to the preservation of the existing forest habitats and their entire characteristic species composition. The continuity of the ecological corridor along the watercourse shall also be preserved. Those factors determined the choice of the best scenario for the environment as the one recommended for implementation.

Based on an analysis of the suggested solutions, the Regional Director for Environmental Protection in Wrocław concurred with the Investor's application for implementing the undertaking under scenario 3, i.e. the performance of a dry reservoir with limited tree removal. As part of the Environmental Impact Assessment, the body examined the anticipated impact of the undertaking on particular elements of the environment, especially on the conservation objectives of Natura 2000 sites.

The investment shall be implemented outside the boundaries of areas protected under Article 6 of the *Nature Conservation Act of April 16th, 2004 (Journal of Laws of 2013, item 627 as amended)*. The nearest protected area (Site of Community Importance: PLH020019 – Pasma Krowiarki) is located approx. 1.4 km away and the watercourses to be covered by the works do not flow through that protected area. In the opinion of this body, investment implementation in the scope presented in the application and with the observance of the abovementioned conditions shall not exert a significant influence on the objectives and subjects of protection of the abovementioned Natura 2000 site or on Natura 2000 network coherence.

“Krosnowice” dry flood control reservoir shall be located on Duna stream, which is a left-hand side tributary of the Nysa Kłodzka river. The dam cross-section of the reservoir was adopted at chainage km 1+375 of Duna stream, approx. 50 m downstream of the place where Duna Dolna and Duna Górna (Topolica) streams meet. The sub-basin surface area at the reservoir cross-section is 33.60 km² (approx. 95% of the entire Duna river sub-basin). The reservoir shall be created by building an earth-fill dam across the Duna stream. With the maximum damming level of 321.6 m AMSL, the reservoir shall occupy an area of approx. 44 ha. The area on which reservoir performance was designed is not developed. The nearest residential building is situated 188 m east, downstream of the reservoir dam. The residential-farming ribbon development along district road No. 3238 D is located 600 m east of the dam. There are no plants particularly burdensome to the environment in the immediate vicinity of the investment. The planned construction of the dry reservoir shall proceed within the boundary of a Body of Surface Water (BSW) named “*Duna Górna wraz z Duną Dolną*”, code PLRW60004121589, within the Odra river basin district (Middle Odra water region). The *Duna Górna wraz z Duną Dolną* BSW is of type 4 (a highland silicate stream with a coarse-grained substrate). In accordance with the provisions of the *Odra River Basin District Management Plan* published on May 27th, 2011 (M. P. No. 40, item 451) (ORBDMP), the discussed BSW is a part of the Unified Body of Surface Water (UBSW) code SO0902. The Body of Surface Water was classified as a natural part of waters and its status was assessed as good, at risk of failing to achieve the environmental objectives defined in the ORBDMP. Derogation 4(7) – 1 was determined for it on account of the planned actions within the scope of investment implementation, resulting in changes to the physical characteristics of the BSW, serving a higher social purpose, i.e. flood protection.

The planned undertaking shall be implemented during a new urban planning cycle. According to the current characterization of the BSW outlined in a study entitled “Determining the environmental objectives for Bodies of Surface Water (BSW), Bodies of Ground Water (BGW) and Protected Areas”, commissioned by the National Water Management Authority and developed by a team of authors under the management of Eng. Agnieszka Hobot M.Sc., (Gliwice, October 2013), the *Duna Górna wraz z Duną Dolną* BSW is a natural body of water the ecological status of which was assessed as moderate (status assessment: 2012) and its chemical status was assessed as good. During the 2015-2021 urban planning cycle there is no justification for the need to maintain hydromorphological changes (in accordance with Article 4 Par. 3 of Directive 2006/60/EC of the European Parliament and of the Council of October 23rd, 2000 establishing a framework for Community action in the field of water policy (OJ EU L 327 of 22.12.2000, p. 1; OJ EU Polish special issue, chapt. 15, vol. 5, p. 275 as amended),

referred to as the “Water Framework Directive”). The protection objective of the Body of Surface Water under analysis is to achieve, by 2021, a good ecological status and a good chemical status of the waters.

The Body of Surface Water achieves a good ecological status when all the water quality indicators associated with biological elements achieve a good status. Physical and chemical as well as hydromorphological elements, which are supporting elements, make it possible for the biological elements to achieve a good status. If biological elements meet the good status conditions, this means that the hydromorphological conditions of a given body of water are good enough to allow the biological elements to achieve a good status. Further, in order for the body of water status to be considered as good, both the ecological as well as the chemical status have to be good.

The core component for the assessment of the ecological status of waters are biological elements. Hydraulic undertakings exert a direct impact on the hydromorphology of waters, and every change to the hydromorphological as well as physical and chemical parameters entails changes to the biological elements which are dependent on hydromorphology. Thus, on the basis of the submitted evidence, it was assessed how hydromorphological as well as physical and chemical parameter changes in a BSW would result in changes to the dependent biological elements.

It stems from the analysis included in the submitted evidence that the undertaking shall not influence the hydrological regime of the watercourse in the scope of normal flows. That influence takes place only during flows related to flood water passage, i.e. flows greater than the permitted flow which equals $5 \text{ m}^3/\text{s}$. The natural flow shall be preserved in the bed (except freshet periods) after reservoir construction because the reservoir does not influence low flows. The sluice devices shall ensure free flow of water corresponding to the permitted flow without damming. Flood wave reduction for Q50% shall equal only 1%. The increase in the flow dynamics during the periods of water damming in the reservoir shall be limited to the time when water is held in the reservoir. The assumed storage of the flood wave is short-time, so it does not cause a change to the hydrological regime, which would influence water status on a wider scale (passage time of a flood wave with Q10% probability of occurrence – 1.5 h; a wave with Q1% probability of occurrence – 36 h; a flow with Q 0.1% probability of occurrence – 46.3 h). The hydrological regime change at the facility operation stage after dam construction shall cover a short section of Duna stream, i.e. that from the dam to the Nysa Kłodzka river estuary – the runoff downstream of the dam shall become even. However, that impact was considered as insignificant because the dam cross-section was selected relatively close to the watercourse estuary to the Nysa Kłodzka river. Still, the flows in Duna are small enough not to change the hydrological regime of the Nysa Kłodzka river. The Duna sub-basin surface area at the estuary is 3360 ha, which constitutes approx. 7% of the Nysa Kłodzka river sub-basin. It is approx. 137+730 km of the Nysa Kłodzka river course, with the total length of Duna equalling 14.2 km. Therefore, a small stream such as Duna does not influence the shape of the Nysa Kłodzka river water-dependent areas. After dam construction, there shall be no water-dependent habitats under the dam. The water-dependent habitats downstream of the Duna estuary to the Nysa Kłodzka river remain under the influence of the Nysa Kłodzka river (the Nysa Kłodzka river shall influence water-dependent habitats 600 m from the dam).

Breaking the hydraulic connectivity between surface waters and groundwater takes place on watercourse sections with tight bed development. The formed beds are relatively short, so they should not contribute to breaking the hydraulic connectivity between surface waters and groundwater. The concrete culvert shall be tight and the new beds shall be made of a permeable material – stone.

The regulations in the dry reservoir basin and downstream of the dam are to be performed in sections using rip-rap. They ensure hydraulic contact with groundwater and alternate with unregulated sections, where the contact of surface waters with groundwater remains in its natural state.

The investment implementation period includes the construction of a dam the bottom sluices of which shall be connected with the watercourse bed. If the conditions defined in the sentence of the decision are taken into account, the watercourse continuity shall not be broken at the construction or operation stages.

Changes to bed morphology shall result from the works related to bank reinforcement as well as backfilling old bed sections and performing new bed sections. This shall cause changes to the bottom and bank structure as well as to the cross-section and the longitudinal section of the bed (including liquidation of deep areas, shallow areas and meanders). However, those impacts shall concern small sections in the scale of the entire BSW and shall be minimized using the measures defined in the decision (limitation of the reinforcement scope). The length of the rivers completely transformed by the planned constructions shall equal 1.8 km (the inflow bed, the dam with sluices and the outflow bed). This constitutes approx. 2.2% of the length of all watercourses in the sub-basin. The flow in the artificial beds shall not be diversified, i.e. the rapid – pool system shall not be preserved. In order to minimize those impacts, the artificial beds shall be diversified by shaping heterogeneous bottoms, e.g. by fixing boulders to the substrate. They shall prevent flow homogeneity and create habitats for fish. The bank zone structure shall be simplified on the regulated sections using rip-rap. The regulation shall usually be performed on one side and on selected sections, so this impact shall be insignificant. The cross-section of the artificial river beds shall be adjusted to a width corresponding to the width of the natural river bed on that section and adjusted to the maximum construction flow.

Once the impacts affecting the achievement of environmental objectives and the impacts causing status deterioration as defined by the Water Framework Directive were identified, and taking into account the scope of hydromorphological changes, it was determined that the potential negative impact on biological elements would be most profound during the undertaking implementation stage. The most significant impact on macrophytes is related to plant destruction as a result of performing bank and bottom reinforcements (bank reinforcements shall be performed only on concave banks). Those works shall influence the composition and number of macrophytes, but they shall concern short sections of the watercourses and the reinforcements shall be made of crushed stone, permitting quick self-restoration of macrophytes. The character of the new flora may be slightly different due to the change of habitat conditions (a change of the amount of light and temperature after the removal of trees and shrubs and a change of substrate character after reinforcement performance), but the scale of those changes shall not be significant. Bottom reinforcement shall be performed only on 40 m of the new bed sections, and therefore shall not be related to

macrophyte destruction. Concerning backfilling the old bed sections of the watercourses and performance of new bed sections, plant destruction as a result of backfilling the sections of Duna and Duna Góna watercourses shall cover the sections with a total length of approx. 1300 m. New watercourse sections shall be performed and their bed shall have a simplified structure (no meanders; liquidation of deep and shallow areas), and therefore the macrophyte development conditions shall be less favourable. Moreover, a short watercourse section (approx. 90 m) shall have the form of a reinforced concrete culvert (a concrete substrate and no sunlight access), where there shall be no plants. However, those impacts shall concern a small section in the scale of the entire BSW and the new watercourse sections shall be populated again by macrophytes in a short time virtually on their entire length (except the abovementioned 90 m long section).

The impact on macrozoobenthos and phytobenthos shall be related mainly to bank and bottom reinforcement as well as backfilling the watercourse sections and constructing new beds. Those activities shall result in direct destruction of macrozoobenthos and phytobenthos as well as a negative change of habitat conditions (various microhabitats shall be replaced with uniform structures). However, the reinforcements shall be made using natural stone – its layout manner shall diversify the flow speed at the operation stage and permit the formation of microhabitats for those living organisms. The watercourses shall include unregulated sections constituting the base for macrozoobenthos, and therefore its composition shall be able to restore itself via drifts and compensation flights of adult insects. Concerning phytobenthos, the use of natural stone shall favour the restoration of phytobenthic organisms at the investment operation stage. Moreover, given the fact that the abovementioned impacts shall concern small sections in the scale of the entire BSW, this impact should not be significant.

The impact on fish fauna shall be related first and foremost to the change of hydromorphological conditions, which shall influence habitat availability for individual species and for individual growth forms. However, this impact shall be limited by the minimizing measures defined in the decision, including i.a. the indicated works performance periods, ichthyological supervision and performing the works stage by stage. Provided that the minimizing measures indicated in the decision (the necessity of maintaining the minimum acceptable flow, devices permitting migration through the dam and the sluice elements, an appropriate manner of works performance at the implementation stage, limitation of the reinforcement scope) are taken into account, the investment in question should not significantly influence fish fauna migration, either. Flood wave storage in the reservoir shall be short, so it should not significantly influence fish fauna as well.

The impact on physical and chemical elements shall be short-term, occurring first and foremost during the works performance stage. It may apply to physical and chemical parameters, such as general suspension or oxygen dissolved in water. The suspension partially contains an organic substance which shall oxidise after penetrating into the river, thus changing the oxygen conditions there. The quantitative and qualitative estimation of that phenomenon depends on many factors such as the amount of suspension penetrating into the watercourse, the flow size in the watercourse or oxygen conditions. In order to limit the scale of the phenomenon concerning the changes of physical and chemical elements, the sentence of this decision imposes investment implementation conditions pertaining to the performance of regulation

works from the river bank and recommendations on periodic interruptions to works during increased water turbidity. The mountainous character of Duna river (significant inclinations and water speeds) makes it an oxygen-rich watercourse and the character of the works causes the phenomenon to be periodic and transient. In fast flowing submontane watercourses with cold, oxygen-rich waters, suspensions which penetrate into the water during the performance of works shall not significantly affect the existing oxygen conditions or aquatic organisms downstream of the performed works. Undertaking implementation shall not affect water salinity or acidity. Water temperature may change due to lack of plants in the new beds. Owing to the mountainous character of the watercourse, the turbulent water flow, the short construction stage (in relation to the reservoir operation period), natural self-purification of the water in the stream and plant succession in the areas covered by construction works, the influence of that factor may be considered as negligible. Duna Góna and Duna Dolna shall carry rubble, which shall be deposited mainly in the sluice inlet area. Therefore, a rubble catcher shall be implemented. The transport of rubble (fine-grained substrate and sedimentation processes) shall not be stopped during low water levels and freshets no bigger than the annual flood. It is assumed that the rubble shall gather in the catcher only during high water levels. The catcher shall be permanently filled with water and a part of Duna stream waters shall constantly flow through it, permitting the fish living there to survive. The catcher is located on the side of the Duna bed (the waters from the streams shall flow into it through a lowered part of the bank), so it shall not disrupt fish migration. A constant connection of the rubble catcher with the watercourse owing to a lowered part of the embankment separating the rubble catcher from the river (located at the rubble catcher inlet) shall ensure permanent supplementation of the water standing in that auxiliary reservoir with fresh river water and permit the fish to get out if the physical and chemical parameters of the water prove inappropriate for them despite the constant flow (excessive temperature rise, oxygen concentration decrease). The rubble shall be removed from the catcher no rarer than once in 5 years. Except the rubble catcher, no other devices limiting rubble movement in the watercourse bed are anticipated in the investment scope. Rubble movement shall be significantly limited on an approx. 1400 m long section, i.e. from the rubble catcher location to the estuary of Duna stream to the reservoir. Downstream of the dam, the rubble movement phenomenon itself shall continue naturally owing to natural processes in the bed enabling that movement. However, it must be remarked that reducing the amount of flowing water during flood flows (to approx. $5\text{m}^3/\text{s}$) shall make this process much slower.

The implementation and operation of the undertaking shall not deteriorate the water quality indicators used to assess its chemical status. With correct use of machinery and devices, there should be no river contamination with petroleum derivatives. Furthermore, parking sites hardened and insulated from the soil have to be designated within the construction site backyard. They shall be used for filling up, servicing, repairing and parking the machines and devices. The construction site backyard shall be located away from the reach of flood waters – 8 m above the water characterized by $Q_p=0.2\%$ exceedance probability (500-year water). A dry reservoir does not generate or emit priority substances that may change water chemism. The cleanliness of the reservoir as well as the river and groundwater depends on the cleanliness of the sub-basin and its anthropogenic use. Reservoirs with permanent damming feature

mechanisms which facilitate deposition of contaminants. Long-term stagnation of water in a reservoir facilitates the deposition of contaminants, and thus an increase in the thermal condition of the held water, phytoplankton growth and deposit sedimentation. Municipal waste-water discharged into the river and agriculture (through fertilisation management and erosion processes) are a source of nitrogen and phosphorus compounds which accelerate phytoplankton growth and in general are a cause of eutrophication of permanently damming reservoirs. A dry reservoir is free from those defects. Due to stagnation of water limited in time, temporarily held water has a thermal condition similar to that of the river as well as turbulent flow, the water is oxygen-rich and as such makes phytoplankton growth difficult, and constant outflow prevents the contaminants from depositing. The dry reservoir basin shall be excluded from intensive agricultural production, which shall reduce the inflow of agricultural type biogenes. Limiting the removal of trees and shrubs shall intensify the action of water purification systems (the plants shall act like filters). It must also be remarked that the area on which reservoir performance was designed is not developed. There is no compact development there. There are no plants particularly burdensome to the environment in the immediate vicinity of the investment, so it can be considered that the investment area is characterized by slight anthropogenic transformation. One should also highlight that the BSW chemical status within the boundaries covered by the application was assessed as good. The landscape in the reservoir location is dominated by wavy relief of the upland type, cut through by Duna Dolna and Duna Górna stream valleys. The area anticipated for reservoir construction is not developed and has the main features demonstrated by the cultural landscape of the agricultural type: it is open and harmonious. That landscape is formed by groups of fields (arable land), pastures on the slopes of valleys and fragments of damp meadows (on the left slope of the valley). Free-standing trees and clusters of trees and greenery add variety to the landscape.

Duna Dolna and Duna Górna stream valleys themselves have the features of a natural landscape, with deciduous forests in the form of low oak-hornbeam forests along the bed as well as fragments of riparian mixed forests with a predominance of Black alder and Crack willow, and therefore these are not significantly industrialized areas carrying a risk of significant water pollution. Thus, taking into account the good chemical status of this body of water and the fact that the reservoir is implemented in an area with slight anthropogenic transformation, it can be ascertained that short-term water stagnation in the reservoir does not carry a significant risk of contaminating surface waters and consequently a deterioration of the chemical status of this body of water.

Taking the above into account, it can be stated that the project shall not have a negative impact on environmental components determining the BSW status, and thus it shall not contribute to a failure to achieve a good BSW ecological and chemical status in the current and the next planning cycle.

The undertaking lies within the boundaries of Body of Ground Water (BGW) No. 110, code PLGW6220110, which, according to the provisions of the *Odra River Basin District Management Plan*, is characterized by a good quantitative status and a good chemical status. In 2008, a review of the BGW boundaries set out in 2005 took place and as a result of those works a new BGW division of Poland was established. It shall be binding in the ORBD RBMP from the next planning cycle (the end of 2015). According to those data, the dry reservoir lies within

the boundary of BSW No. 125, code PLGW6000125. The quantitative and chemical status of this body of water has not changed.

In accordance with the binding legal regulation, the environmental objective for a Body of Ground Water is:

1. prevention or limiting of introducing contaminants;
2. prevention of deterioration of its status and improvement of that status, and thus, in the present case, maintenance of a good BGW quantitative and qualitative status;
3. protection and repair activities as well as ensuring balance between water uptake and feed, so as to achieve a good water status.

The implementation and operation of the investment should not affect the quantitative and chemical status of this Body of Ground Water. During the investment implementation and operation stages, contaminants which could change the chemism of the waters shall not be generated. The works performed during the undertaking construction stage shall not generate any negative impacts of a qualitative character on the groundwater. They may only cause short-term, temporary lowering of the groundwater table level during the performance of the necessary excavation drainage. Nonetheless, in order to fully eliminate the potential of groundwater contamination, all locations designated for servicing vehicles and working machines shall be periodically (till the end of the construction period) covered with insulation materials. Domestic waste-water shall be discharged to tight holding tanks and regularly collected by authorised entities. The works shall be performed with the use of construction equipment in good working order. In the event of uncontrolled penetration of petroleum derivatives into the ground or soil in connection with using heavy construction equipment, appropriate measures shall be taken with the aim of removing the contaminants from the ground and the soil so that groundwater and surface waters are not contaminated.

The groundwater status in the area of a dry reservoir also depends on the cleanliness of the sub-basin and its anthropogenic use. As mentioned above, the BSW chemical status on the section covered by the application was assessed as good. The possibility of contaminant transfer together with rain waters from the terrain surface to the groundwater largely depends on the layer thickness of low permeability formations insulating the aquifer. Taking into account the relatively low filtration ratio in Cretaceous formations ($k \sim 0.3$ m/day), one can consider the influence of damming on groundwater as slight. The water temporarily stored in the reservoir shall have a thermal condition similar to that of the river as well as turbulent flow, the water shall be oxygen-rich and the constant outflow shall prevent the contaminants from depositing. The dry reservoir basin shall be excluded from intensive agricultural production. Tree removal shall be limited. As mentioned above, the reservoir is implemented in an area demonstrating slight anthropogenic transformation. Thus, taking into account the good chemical status of this body of water, the low filtration ratio in Cretaceous formations and the fact that the reservoir is implemented in an area with slight anthropogenic transformation, it can be ascertained that short-term water stagnation in the reservoir does not carry a significant risk of contaminating the groundwater and consequently a deterioration of the chemical status of this body of water.

The works related to reservoir construction may cause instances of short-term, transient, local lowering of the groundwater table due to the necessity for performing the necessary drainage

during the earthworks and the construction works. This mainly applies to ground excavations for the dam body foundation and excavations associated with the construction of sluice devices. The earth for dam construction shall be collected during reservoir construction. That earth shall be collected from the surface of Duna Dolna and Duna Górna stream valley slopes (up to 3 m). Since the aquifer on Duna valley slopes is located at a depth of 2.9 to 12 m in the Cretaceous formations, the formation of a depression cone is not anticipated. The instances of water table lowering related to the excavations and excavation drainage shall be local. A flood wave with the maximum damming level shall stay in the reservoir no longer than 5 days (except special situations). This is caused by the runoff time of flood waters with the maximum damming level and by the flood wave passage time. In connection with the relatively low filtration ratio in Cretaceous formations ($k \sim 0.3$ m/day), the influence of damming on groundwater shall be slight. Holding the flood waves in the reservoir shall change the soil-water conditions, which shall manifest itself in a periodic rise of the water table in Quaternary formations.

Taking the above (the filtration ratio, the water storage time in the reservoir) into account, it can be considered that the periodic groundwater changes shall not influence the depth of waters in the nearest wells, either (approx. 174 m, 414 m, 418 m and 507 m, east of the dam). One must also highlight that those wells are located behind the dam, which shall be sealed from the upstream side.

There is a borehole in the investment area, in the reservoir basin – it is a deep-water well (a hydrogeological borehole) with a depth of 525 m, located on the right side of Duna Górna stream. It is labelled as 11R in the register of the Polish Hydrogeological Survey (a mineralized water intake) and, according to the PHS, it is an unused deposit. The borehole is closed with a steel well housing with an intake in the form of a tap. It was demonstrated that, taking into account the filtration ratio of the roof parts of the orogenic belt, the influence of temporary damming in the reservoir on groundwater is insignificant.

Therefore, one can assume that the undertaking should not influence the chemical status or the quantitative status of the BGW, so it shall not contribute to a failure to achieve the environmental objectives defined for that BGW in the current and the next planning cycle.

The potential sources of noise shall be machines and devices working on the construction site as well as means of transport at the reservoir implementation stage. The sources of noise shall concentrate in the dam and basin construction area as well as in the construction site backyard. Earthworks shall be a source of a harmful impact on the acoustic environment due to the use of heavy construction equipment. The noise related to car transportation shall not have a big influence on the environment beyond the construction site because materials shall be transported using mainly internal access roads. The noise emitted to the environment in connection with the operation of heavy construction equipment (excavators, bulldozers, loaders and compactors) is local. The undertaking is located outside the acoustically protected area. The nearest residential building is situated 188 m east, downstream of the reservoir dam. The residential-farming development along district road No. 3238 D is located 600 m east of the dam. The above impacts shall be short-term and shall not cause irreversible changes in the environment. The dam construction technology requires adequate substrate compaction. This demands appropriate equipment, the work of which generates vibrations. The above impact decreases as the distance from the vibration source increases. Vibrations (caused by the work of

the compaction equipment) exerting a harmful influence on the existing buildings shall not be generated in relation to the designed construction owing to the distance from the existing buildings (approx. 188 m).

The dam and its operation do not pose a hazard to the acoustic climate because they are not sources of noise. The only noise emission source may be the functioning of their related facilities such as roads. The access roads shall be used only to operate the facility and reach the fields (the pastures). The capacity of the designed roads is estimated at 5 vehicles an hour. With such traffic intensity, the influence on the propagation of the contaminant and noise emission into the environment is negligible. All those roads shall be routed in an area to which the Investor shall have a legal title (in the reservoir basin), far away from residential buildings.

Disruptions related to pollutant emission may occur during undertaking implementation. The possible emission shall be local and limited in time to the period of construction works. Emission of vehicle exhaust fumes and dust may occur both at the construction site as well as access roads leading to the area designated for construction. Emission of gaseous contaminants by means of transport shall be mainly limited to the construction site, the backyard and access roads. Delivery and assembly of elements shall be performed using heavy transport as well as construction works machinery and devices. In the opinion of the body, taking into account the scope and type of works (typical construction and assembly works), one can state that the associated emissions shall not cause a permanent, significant impact in the areas within their impact reach. During the construction works, fugitive dust emission may appear, caused by earthworks and car transportation (dust emission from the surface of access roads). Dam operation shall not constitute a source of pollutant emission into the air.

The undertaking implementation period is associated with changes in the local landscape structure. The appearance and moving of heavy vehicles, the occurrence of portable construction facilities or the erection of individual structures might be seen as directly negative in the visual sense. However, this impact is limited to the investment implementation stage and the area shall be cleared following the completion of works.

Artificial water reservoirs created as a result of damming the river valley by a hydraulic structure may influence the river valley landscape change. The designed reservoir is a dry structure, and the dam under normal operating conditions shall be visible both from the reservoir basin side as well as the downstream side. However, the earth-fill dam with gently inclined slopes, covered with topsoil and sown with a mixture of grasses, presents the smallest interference in the surrounding area, naturally blending into the valley sides. There are no monuments, objects of high cultural value or cultural assets in the designed reservoir area. The planned reservoir is situated outside archaeological sites (the nearest archaeological site is located approx. 500 m west of the dam cross-section). The nearest buildings of historical value are found over 600 m east of dam location.

The supplement to the Report provides the results of the cumulative environmental impact assessment concerning the “Krosnowice” dry flood control reservoir together with other reservoirs implemented in the Nysa Kłodzka river basin. Assessing the scale of the cumulative impact of the undertaking together with other hydraulic structures on the physical characteristics of the body of water within the scope of hydrological and morphological indicators was based on the methodology used to identify significantly altered bodies of water,

contained in the study entitled: “Verification of indicators for an assessment of the quantitative and morphological status of bodies of surface waters together with a change to their threshold values to support the initially identified significantly altered bodies of waters” (Błachuta J., Jarząbek A., Kokoszka R., Sarna S.; KZGW, Warsaw, 2006). The used methodology makes it possible to assess the scale of the undertaking impact on the physical characteristics of the body of water. The methodology is based on hydrological and morphological indicators. The submitted evidence applied: the indicator defining the total non-returnable uptake of surface waters compared to the average low flow in the pseudo-natural multiannual period in the cross-section closing the sub-basin of the body of water; the indicator of meeting the minimum acceptable flow criterion; the total length of embankments of watercourses significant for the sub-basin of the body of water compared to the total length of significant banks; the total height of inventoried damming structures compared to the total level difference of watercourses significant for the sub-basin of the body of water; the total length of watercourse parts cut off by perpendicular structures with a defined level difference compared to the total length of all significant watercourses; and the total length of river sections along which regulation works were performed. The presented indicators make it possible to characterise the spatial scale of the undertaking.

It stems from the assessment that a dry reservoir does not cause a non-returnable uptake of waters, and therefore the indicator defining the total non-returnable uptake of surface waters compared to the average low flow in the pseudo-natural multiannual period (1960-1980) in the cross-section closing the sub-basin of the body of water shall not change. A dry reservoir passes (without damming) the waters corresponding to the annual flood. It means that the natural flow in the river is maintained to that flow size, which automatically guarantees the maintenance of the minimum acceptable flow. A dry reservoir does not introduce new embankments of the watercourse, so the indicator (the total length of embankments of watercourses significant for the sub-basin of the body of water compared to the total bank length of significant watercourses) shall not demonstrate reservoir influence on the cumulative impact in the sub-basin. The indicators concerning: the total height of inventoried damming structures compared to the total level difference of watercourses significant for the sub-basin of the body of water; and the total length of watercourse parts cut off by perpendicular structures with $h > 0.4$ m level difference pertain to sills, weirs and flood storage reservoirs. A property referred to as level difference is necessary to calculate the values of those indicators. The level difference has to be measured from the water table level on the tailwater side during average low water levels to the height of the water structure edge; for a reservoir, it is the difference between the normal damming level and the tailwater level. A dry reservoir has a bottom sluice on the river bed level and does not dam water during low and medium water levels, so it does not possess the physical feature referred to as level difference. The only indicator that shall change slightly is the total length of river sections on which regulation works were performed (longitudinal structures and a documented change of the river course) compared to the total length of significant watercourses. It stems from the analysis that the value of this indicator shall reach 0.076 without an adjustment ratio. Thus, the calculation results for the worst case (i.e. without an adjustment ratio) show that this indicator shall not exceed the threshold value of 0.5.

The boundary of the area subject to flooding during the maximum damming level is 13 km from

the state border. The Duna Dolna and Duna Górna sub-basin is not a border sub-basin and its boundary is approx. 6 km from the state border. The peaks of the Bystrzyckie Mountains separate that sub-basin from the state border. The “Krosnowice” dry reservoir does not significantly influence the watercourses above the boundary of the flooding with the maximum damming level.

Owing to the lack of impacts in the upper parts of the watercourse, no cross-border environmental impact may take place because the waters flow to the inside of the country. All the identified impacts are limited to the reservoir basin or their potential impact area is located downstream of the dam, owing to which they exert no influence on the border rivers.

Based on the submitted documentation taking into account the impact assessment as well as potential environmental hazards associated with the implementation and operation of the investment and indicating a number of necessary actions in order to secure and minimize the potential negative impacts, the body decided to impose conditions on undertaking implementation, which are listed in the sentence of this decision.

The condition in clause I.2.1 was imposed to make the periods of an increased noise coming from the performed works alternate with the periods of fewer disruptions – it is aimed to limit the negative impact on animals.

The condition in clause I.2.2 was defined because it was determined during the analysis of the suggested undertaking scenarios that the scenario with the limited scope of tree removal, i.e. with the removal in the zone characterized by $Q_p=10\%$ flooding probability (surface area: 5.1 ha), was the most favourable scenario to the environment – the reduction of the areas subject to tree removal shall limit the loss of animal living grounds.

The condition in clause I.2.3 is aimed at protecting animal species against the loss of their breeding grounds, feeding grounds and refuges during the breeding period. The tree removal largely concerns riparian tree covers and the investment surroundings are dominated by meadows and arable land, so the removal of high greenery in the breeding period would significantly reduce habitat availability in the most important period to the animals. The tree removal shall cover a surface area of approx. 5.2 ha.

The condition in clause I.2.4 was imposed to protect bat species which may use trees as refuges – the presence of a specialist is aimed at guaranteeing that trees in which bats are present shall not be cut down.

The periods indicated in clause I.2.5, I.2.17, I.2.24 and I.3.4 were provided to protect Bullhead *Cottus gobio* and Brook lamprey *Lampetra planeri* – the species listed in Annex II to the abovementioned *Habitats Directive*: the works should be performed beyond the spawning period of those species, which lasts from March 1st to May 30th. Moreover, the works should be maximally reduced from September 1st to the end of February due to the migration and breeding period of Brown trout *Salmo trutta fario* – a species which is not subject to legal protection, but constitutes a significant component of waters in the scope of fishing management. The stubbing of roots on stream slopes shall be related to loosening the soil on the slopes; the soil shall penetrate into the stream waters and result in an increase of suspension concentration in the watercourse as well as influence the physical and chemical parameters of the water. A similar hazard (an increase of suspension concentration) shall be generated by the first transfer of waters through the constructed dam and the new bed sections. The performance of works in

watercourse beds in the abovementioned period could also result in scaring and accidental killing of fish fauna beside the habitat condition changes. Such situations constitute a significant hazard to fish fauna (especially to spawn and fry), and if they took place at the peak of the breeding activity of the species (e.g. Bullhead spawns in March, the embryonal and hatching period takes place in April and the fry grows in May), they would negatively affect the breeding success of the species and the conservation status of its local population. It must be highlighted that the works performance limitation indicated in clause I.3.4 concerns an even shorter period during the year (from April 1st to May 15th, i.e. 1.5 months). Moreover, it concerns only maintenance works (which means that it shall be possible to carry out the necessary repairs in an emergency situation) and only the reservoir basin (not the dam body or the sluice devices).

The condition in clause I.2.6 is aimed at protecting the swathes of habitats listed in Annex I to *Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJEU E.L92.206.7, OJEU-sp.15-2-102 as amended)*, i.e. riparian mixed forests of willow, poplar, alder and ash tree (code: *91E0) and Galio-Carpinetum and Tilio-Carpinetum oak-hornbeam forests (code: 9170). The surface areas of those habitats inventoried within the boundaries of the undertaking are as follows: 9170 – 4 swathes with a total surface area of approx. 12.3 ha; *91E0 – 2 swathes with a total surface area of 1.42 ha. Approx. 5.2 ha of habitat 9170 and approx. 1 ha of habitat *91E0 shall be destroyed in connection with investment implementation (as a result of tree removal). 2 small swathes (total surface area: 0.05 ha) of habitat 6430 (mountain herbs and riparian herb growths) were also determined within the boundaries of the planned investment, but they shall be destroyed during investment implementation. Given the swathe conservation status, habitat resources in the region and the scope of the planned works, all the above mentioned instances of habitat destruction were considered as permissible.

The conditions in clause I.2.7-I.2.9 are aimed at protecting high greenery and constitute the performance of duties stemming from Article 82 of the *Nature Conservation Act*. The necessity of performing the works manually in the area of root clumps (clause I.2.8) is aimed first and foremost at protecting them against mechanical damage. The conditions in clause I.2.9 and I.2.10 are aimed at protecting high greenery intended to be retained against damage by equipment and against unfavourable changes stemming from excessive soil compaction in their immediate vicinity.

The conditions in clause I.2.10 and I.2.11 are aimed at protecting the soil together with the formed layer of low greenery and the seed bank as well as ensuring the possibility of reusing it to create a fertile soil layer. The period indicated in clause I.2.10 is aimed at protecting the green areas (and related ecosystems) against destruction in the vegetation period. It shall also enable plants and small animals to develop all their subsequent growth forms and breed (animals) or develop endospore forms (plants). This shall allow the local populations of plants and animals to survive and the performance of duties stemming from clause I.2.11 shall enable them to develop further.

The condition in clause I.2.12 is aimed at limiting the death rate of small animals, especially amphibians, including the species protected under the *Regulation of the Minister of the Environment of October 6th, 2014 on protection of animal species (Journal of Laws of 2014,*

item 1348), at the investment implementation stage.

The condition in clause I.2.13 was imposed to minimize the surface area occupied in relation to investment implementation and thus limit the destruction of the fertile layer and herbaceous plants as well as reduce the scope of the removal of trees and shrubs.

The condition in clause I.2.14 was imposed to limit the penetration of the areas located within the reservoir basin.

The conditions in clause I.2.15 and I.2.16 were imposed to protect the watercourse beds against mechanical damage by equipment. They are also aimed at protecting the living organisms in the watercourses against accidental killing/destruction and unfavourable changes of physical and chemical parameters (disturbing the bottom deposits, suspension concentration increase) as well as biological parameters (destruction of breeding grounds, feeding grounds and refuges).

The conditions in clause I.2.18-I.2.22 and I.3.5 were imposed to protect the fish fauna. During the performance of works, it is necessary to ensure water flow continuity in the watercourse and appropriate fish fauna living conditions. Works performance in sections is aimed at minimizing the negative impacts related to the works implementation stage: they shall be concentrated on one short section, while the remaining watercourse sections shall be subject to less significant indirect impacts or shall remain beyond the investment impact range, enabling fish fauna to live. It is necessary to conduct ichthyological supervision during the works in the bed and the maintenance works in the rubble catcher area. This should prevent the unfavourable impacts stemming from the lack of specialist environmental knowledge. The tasks of an ichthyologist shall include: indicating an appropriate manner of works performance, controlling the correctness of works performance, observing the fish fauna behaviour and ensuring the implementation of adequate measures in the situations threatening the fish fauna. Moreover, it is necessary to protect the watercourse waters against contamination at the investment implementation stage. This is aimed at preventing the changes of the physical and chemical conditions of the water as well as habitat conditions for the river fauna. Since it may prove impossible to eliminate water contamination with suspension entirely, the condition in clause I.2.22 was imposed: it orders the monitoring of that concentration and interrupting the works as necessary to permit reduction of the concentration of that contaminant in the watercourse.

The application of the measures referred to in clause I.2.23 is aimed at facilitating the entrance of the desired herbaceous plant species in the area subject to the works. It is also aimed at preventing spontaneous entrance of invasive plant species in the river valley.

The condition in clause I.2.25 is aimed at increasing the habitat diversity in the rubble catcher area so that it is used by a greater number of plant and animal species, especially amphibians. Appropriate shaping of the reservoir bottom and slopes shall contribute to a quick occupation of shallow areas (sunlight access) by aquatic, emergent and aquatic-marshland plants. This shall be a perfect refuge and breeding ground for amphibians. Another area truly favourable to amphibians shall be the left-hand side embankment of the reservoir together with the land strip adjacent to the watercourse; it shall border on the watercourse on one side and on the gentle reservoir banks on the other side.

The conditions in clause I.2.26, I.3.11, II.2.2 and II.2.3 were imposed in order for the approving body to obtain information on the scope and manner of performing the measures (which shall supplement the documentation concerning undertaking implementation) and to obtain a

confirmation of a relevant specialist's participation in the implementation of the provisions contained in the clause, which should ensure appropriate protection of natural habitats as well as plant and animal species. If the examinations reveal a previously unforeseen increase of the negative influence on the natural environment, it shall be possible to indicate and take additional measures minimizing those impacts.

The earth surface protection (together with soil and relief) consists in preventing and counteracting its unfavourable changes (degradation, devastation) as well as in restoring their appropriate status in case of damage or destruction. One factor causing geomechanical transformations of the earth surface which leads to its degradation is the movement of heavy equipment (cars, cranes, machines) and stacking the structural elements directly on the ground surface. Pressing the soil down by heavy equipment increases its density, which reduces the spaces between soil particles, making the soil partially or completely lose its absorption properties. Meeting the conditions defined in clause I.2.27-I.2.29 shall contribute to minimizing the negative impact of works performed during the construction stage of the undertaking on the soil environment.

The impact on the soil-aquatic environment during the performance of construction works may be associated with penetration of contaminants, including petroleum derivatives. As a result of the construction site backyard operation, sanitary waste-water shall be generated and collected in portable sanitary devices and holding tanks. In order to protect the soil-aquatic environment and exclude the possibility of contaminant penetration (in particular petroleum derivatives) to the aquatic environment and to the soil, the conditions defined in clause I.2.30-I.2.35.

The works related to reservoir construction may cause instances of short-term, transient lowering of the groundwater table due to the necessity for performing the necessary drainage during the earthworks and the construction works. Therefore, to protect the qualitative and quantitative status of groundwater, the body decided to impose the condition defined in clause I.2.36.

The conditions in clause I.2.37-I.2.38 were imposed to limit the tiresomeness in the scope of the undertaking influence on the acoustic climate and pollution emission to the atmospheric air.

The conditions listed in clause I.2.39 -I.2.40 were imposed to ensure appropriate management of waste generated at the investment implementation stage.

The condition defined in clause I.3.1 is aimed at reducing the water damming period in the reservoir because that period shall make the migration of living organisms through the reservoir more difficult and shall be characterized by different habitat conditions (changes of temperature and oxygenation degree). To prevent the scale of the abovementioned reduction and changes from exerting a significant influence on living organisms, water storage in the reservoir (except special situations) should not exceed 5 days (water storage with maximum damming for 2 days and then a gradual water outflow from the reservoir). This limitation complies with the flood wave storage period defined in the submitted documentation: it indicates that the maximum damming in the reservoir shall be maintained for no longer than 46.3 h, i.e. less than 2 days (that situation concerns water with the probability of occurrence of 0.1% – so-called 1 in 1000 years water). After that time (or earlier) the water shall be gradually released from the reservoir. The entire process shall not exceed 5 days – this indication also takes into account the necessity of water storage in the reservoir to avoid the overlapping of

flood waves on Duna stream and Nysa Kłodzka river (the wave on the Nysa Kłodzka river does not last long enough to necessitate water storage in the reservoir for more than 5 days).

The designed rubble catcher shall be permanently filled with water and Duna stream waters shall flow through it, permitting the presence of living organisms. The condition in clause I.3.3 was imposed not to limit animal migration through the rubble catcher.

The conditions in clause I.3.6 and I.3.7 were imposed to maintain the possibility of fish fauna migration through the sluice devices.

The reservoir use manner indicated in clause I.3.8 takes into account its primary function, i.e. the readiness to accommodate a flood wave, which excludes the presence of high greenery. Despite that function, agricultural use is possible in the periods between the passage of flood waves. If the mowing methods and periods are observed, such reservoir use manner shall favour the colonization of that area by invertebrates, including i.a. butterfly species and meadow bird species (e.g. Corncrake *Crex crex*). The limitation concerning the use manner of the rubble catcher indicated in clause I.3.9 stems from the necessity of protecting the fish fauna living there – the reservoir must not be used for angling purposes.

The condition in clause I.3.10 was imposed to limit the contamination with light within the investment area as it could have a negative influence on animals, i.a. disturb the present manner of living of insects, bats and birds.

Under Article 75 Par. 3 of the *Environmental Protection Law of April 27th, 2001 (Journal of Laws of 2008 No. 25 item 150 as amended)*, the Investor is obliged to take actions aimed at repairing the damage caused, so clause II.1 defines the conditions of environmental compensation performance. This is not environmental compensation as defined by Article 35 of the *Nature Conservation Act*.

A significant negative impact related to the investment in question shall be the removal of trees and shrubs, which shall result in the destruction of approx. 5.2 ha of habitat 9170 and approx. 1 ha of habitat *91E0. Therefore, clause II.1.1 imposes the obligation to perform planting on a surface area of at least 7 ha. The aim of the compensation in the longer term is to improve the living conditions of and create new living grounds for the animal species that lose their habitats in relation to the removal of trees and shrubs in question. It is also aimed at attempting to restore the surface areas of the destroyed habitats, so the planting should consist of the species forming those habitats.

Due to destroying the nesting places of Grey wagtail *Motacilla cinerea* – a bird species listed in the *Regulation on protection of animal species* – clause II.1.2 imposes the obligation to perform alternative nesting places, i.e. 2 boxes appropriate for that species.

No hibernation grounds or breeding grounds of bats were found in the designed undertaking area, but the surveillance determined the activity of 8 bat species, i.a. Common noctule *Nyctalus noctula*, Common pipistrelle *Pipistrellus pipistrellus*, Daubenton's bat *Myotis daubentonii*, Common long-eared bat *Plecotus auritus* and Grey long-eared bat *Plecotus austriacus*, the presence of which is related to migrations and possibly also feeding. In the specialists' opinion, there is no risk of losing the bat feeding grounds, but the risk of losing their breeding grounds during the removal of trees and shrubs cannot be completely excluded. Therefore, the condition in clause I.1.3 recommends environmental compensation in the form of hanging (and later maintenance) of 50 boxes for bats.

The conditions defined in section I.4 were imposed to minimize the investment influence on fish fauna. The minimum acceptable flow indicated in clause I.4.1 was calculated using so-called Kostrzewa's method and defines the flow size necessary to maintain the fish fauna living conditions (the maintenance of the minimum acceptable flow on that level is also necessary at the operation stage, as indicated in clause I.3.2). The conditions in clause I.4.2-I.4.4 are aimed at ensuring the possibility of fish fauna migration through the newly constructed structures and devices. The suggested series of permanent sills is aimed at slowing down and differentiating the water flow, enabling the fish fauna to go through the sluice channel and creating resting places for the organisms in the bottom zone. The indicated location of the sluice device outlet (directly to the stilling basin) shall permit the preservation of the water layer covering the stream bottom even during the lowest possible flows. The minimum width of the trusses indicated in clause I.4.4 is aimed at permitting all the fish species living in Duna to migrate.

The condition indicated in clause I.4.5 was imposed to minimize the transformations within the watercourse bed which could result in unfavourable changes to the fish fauna habitat conditions. This is first and foremost aimed at preserving the biggest possible number of breeding, feeding and resting grounds. The condition indicated in clause I.4.6 aims to limit the unnecessary interference in the bottom of the new bed – in accordance with the submitted documentation, the bed bottom shall be located in a rocky substrate layer, so it shall be unnecessary to reinforce it.

The condition in clause I.4.7 was imposed to ensure proper use of the collected earth masses. To minimize the soil cover destruction and protect the soil-aquatic environment, the decision imposed the condition in clause I.4.8.

The obligation to monitor the stability of the earth-fill structure referred to in the Report stems from the currently binding legal regulation and aims to monitor the technical state of the structure from the start of the construction works.

Under § 119 of the Regulation of the Minister of the Environment of April 20th, 2007 on technical conditions for hydraulic structures and their location (Journal of Laws No. 86, item 579), hydraulic structures are equipped as required with instrumentation enabling observation and measurement of:

- 1) movement and deformation of the hydraulic structure, its substrate and the adjacent area;
- 2) stresses in the hydraulic structure;
- 3) levels and pressures of groundwater and filtration processes occurring in the hydraulic structure, its substrate and heads;
- 4) headwater and tailwater levels, as well as water levels in the main tributaries;
- 5) changes to the bottom and banks;
- 6) ice phenomena;
- 7) meteorological phenomena.

Thus, the applicant, in order to ensure the dam safety control as required by the regulations, shall perform control-measurement sections equipped with surface benchmarks, deep benchmarks, observation pillars, piezometers, feeler gauges and pressure probes (to measure the water level in the reservoir). The dam shall be equipped with instrumentation to conduct the

following: monitoring of vertical movement (subsidence) of the dam substrate and body and the discharge devices, measurement of filtration pressure under the dam body, measurement of the volume of any waters filtering through the dam body, measurement of the water table level in the reservoir basin and measurement of the water levels in the river. According to the regulation by the Minister of the Environment of August 17th, 2006 *on the scope of water management instructions* (Journal of Laws No. 150, item 1087), a list of measurement devices associated with water management located on the water structure as well as the principles of performing observations and measurements shall be defined in the water management instruction. The regulation also defines the notification procedure concerning the occurrence of consequences of dangerous incidents at the water structure. A water study and a water management instruction is necessary to obtain a water permit for special use of surface waters via damming structures. The water management instruction draft is approved by the relevant body issuing the water permit. Thus, the body did not introduce into this decision the provisions pertaining to the principles of observation, measurements and monitoring of the groundwater table and earth-fill structure stability or monitoring the state of dam substrate and structure concerning the possibility of leaks of waters held in the reservoir during the period of freshets, as the obligation to perform these observations stems from the binding legal regulation, and the responsibility in this scope lies with the body issuing the water permit.

The condition in clause II.2.1 aims to control the effectiveness of the proposed measures which minimize the negative impacts related to investment implementation and operation on the fish fauna migration possibility. Should the need arise, the monitoring results shall also constitute the basis for introducing modifications to the applied devices supporting animal migration.

In the opinion of this body, taking into account the conditions defined in Article 82 Par. 2 of the EPA Act, the data on the undertaking possessed at the time of issuing the decision on the environmental conditions make it possible to exhaustively assess the environmental impact of the undertaking and there is no need to perform an Environmental Impact Assessment of the undertaking within the scope of the proceedings to issue the decision as referred to in Article 72 Par. 1 of the EPA Act. They made it possible to exhaustively and comprehensively assess its environmental impact, including the cumulative impact of other undertakings, and define the undertaking implementation conditions. The assessment reveals no significant accumulations of negative impacts. The planned undertaking is located outside the boundaries of protected areas referred to in Article 6 of the *Nature Conservation Act*, including outside of Natura 2000 sites. The proceedings underway for the undertaking in question analysed the possibility of occurrence of a potential impact of the planned undertaking on areas requiring special protection due to the occurrence of plant and animal species and their habitats or natural habitats subject to protection, including Natura 2000 sites as well other nature protection forms. The collected evidence made it possible to assess all potential impacts of the undertaking on the environment, including Natura 2000 sites, assess the significance of the impacts, propose adequate minimizing measures and propose alternative solutions within the scope of the measures compensating for the negative impacts which equally well minimize the impact of the undertaking on the environment. Therefore, in the opinion of the present body, the data on the undertaking possessed at the time of issuing the decision on the environmental conditions make it possible to exhaustively assess the environmental impact of the undertaking, so, under clause

III of the present decision, the body did not impose an obligation to perform an Environmental Impact Assessment of the undertaking within the scope of the proceedings to issue the decision as referred to in Article 72 Par. 1 of the EPA Act.

During the proceedings on issuing the decision in question, the environmental protection body allowed all evidence which might have contributed to a correct determination on the merits of the case, and the determination was made on the basis of the entire evidence collected during the proceedings, by which fact the body met the requirements of Article 75 § 1 and Article 80 of the *Code of Administrative Procedure*.

In the case of a collision with the sites of plant, animal or fungi species protected under the Regulations of the Minister of the Environment: *of October 9th, 2014 on protection of plant species (Journal of Laws, item 1409)*, *of October 6th, 2014 on protection of animal species (Journal of Laws of 2014, item 1348)* and *of October 16th, 2014 on protection of fungi species (Journal of Laws of 2014, item 1408)*, to which bans are related, the Investor should obtain a separate permit for prohibited activities in relation to those species from a relevant body before the commencement of works, in accordance with Article 56 of the *Nature Conservation Act of April 16th, 2004 (Journal of Laws of 2013, item 627 as amended)* and, in the event of obtaining such a permit, perform the works with consideration for the conditions stemming from the permit.

In the light of the above, it was ruled as in the decision sentence.

Information

The parties may appeal against the decision to the General Director for Environmental Protection via the Regional Director for Environmental Protection in Wrocław within 14 days of the delivery date.

[two stamps of the Regional Director for Environmental Protection in Wrocław
Michał Jęcz /illegible signature/]

Under Article 7 Subpar. 2 of the Act of November 16th, 2006 on stamp duty (Journal of Laws of 2014, item 1628 as amended), the Regional Water Management Authority in Wrocław is exempt from stamp duty.

Recipients:

1. Marcin Balicki
Sweco Hydroprojekt Kraków Sp. z o.o.
15. Trybuny Ludów Street, 30-660 Cracow
2. The parties to the proceedings via an announcement, under Article 49 of the CAP
3. File.

Copies to:

1. The National District Sanitary Inspector in Kłodzko

[three stamps:]

020860626

REGIONAL DIRECTORATE FOR ENVIRONMENTAL PROTECTION in WROCLAW
50-153 Wrocław, pl. Powstańców Warszawy 1
tel.: 71 340 68 07, fax 71 340 68 06, NIP [tax ID No.] 897-17-47-119

The decision became final on 17.04.2015.

pp. Regional Director for Environmental Protection in Wrocław
Marlena Polakowska /illegible signature/
Head of the Environmental Impact Assessment Department

020860626

REGIONAL DIRECTORATE FOR ENVIRONMENTAL PROTECTION in WROCLAW
50-153 Wrocław, pl. Powstańców Warszawy 1
tel.: 71 340 68 07, fax 71 340 68 06, NIP [tax ID No.] 897-17-47-119

Appendix to the decision of the Regional Director for Environmental Protection in Wrocław of March 13th, 2015, ref. No.: WOOŚ.4204.2.2013.LCK.24 for the undertaking entitled: “Construction of “Krosnowice” – a dry flood control reservoir on Duna stream near Krosnowice, Kłodzko Municipality in the Lower Silesian Province”

1. Undertaking objective – the operation principle

The subject of the undertaking is the construction of “Krosnowice” dry flood control reservoir located on Duna stream near Krosnowice, Kłodzko Municipality, Kłodzko district, Lower Silesian Province. The Duna stream is a left-hand side tributary of the Nysa Kłodzka river. The reservoir shall be created by building an earth-fill dam across the Duna stream at chainage km 1+375 (measured from the estuary to the Nysa Kłodzka river), approx. 50 m downstream of the place where Duna Dolna and Duna Górna (Topolica) streams meet. In administrative terms, the investment is located in Krosnowice and Starków, within the boundaries of Kłodzko Municipality.

The maximum flood volume of the reservoir shall reach 1.92 M m³, with a water damming elevation of up to 321.6 m AMSL. With the maximum damming level of 321.6 m AMSL, the reservoir shall occupy an area of approx. 44 ha.

The operation principle of a dry flood control reservoir is to capture significant volumes of the flood wave in the reservoir basin (confined with a dam) as well as to permit constant outflow of water volumes which are safe to the areas located downstream of the reservoir. The waters shall flow out through a bottom sluice located in the dam on the river bottom level. This shall allow for passing low and medium flows through the reservoir basin as well as for free migration of benthos (downstream) and fish fauna (upstream and downstream of the watercourse). Except flood periods, the river flows freely in the existing bed through the sluice devices.

The reservoir dam shall be an earth-fill dam with a separated concrete sluice part. Beside the bottom sluice, the dam shall also be equipped with spillway devices in the upper part of the dam body.

2. Scope of works and basic technical parameters of the undertaking

2.1 The dam – Scope of works

The dam shall be located at chainage km 1+375 of the Duna stream (measured from the estuary to the Nysa Kłodzka river). The dam shall occupy a surface area of approx. 2.1 ha. It shall be approx. 452 m long, its maximal width at the base shall reach approx. 90 m and its height measured from the valley bottom shall reach approx. 13.5 m.

The scope of works includes:

- development of an earth-fill cofferdam and a cofferdam made of sheet piles in order to develop sluice devices,
- development of the body of the earth-fill dam,
- protection of the upstream slope of the dam with an anti-erosion mat and sowing with a mixture of grasses,
- protection of the downstream slope of the dam with all-in aggregate and fertile soil as well as sowing with a mixture of grasses.

2.2 The spillway-relief devices

The scope of works includes:

- development of a reinforced concrete spillway with an approx. 27 m long crest together with an approx. 170 m long reinforced concrete stairway discharging the water on the right slope of the valley to the Duna stream bed downstream of the dam,
- development of two approx. 90 m long reinforced concrete bottom sluices,
- development of a reinforced concrete stilling basin.

2.3 Bed works

Flowing capacity enhancement and reinforcement of the Duna stream bed banks downstream of the dam to the stream estuary to the Nysa Kłodzka river as well as reinforcement of eroded banks of Duna Górna and Duna Dolna streams in the reservoir basin together with slope levelling:

- development of bank trims made of rip-rap on the concave curves of Duna Górna stream, Duna Dolna stream and Duna stream downstream of the dam to the estuary to the Nysa Kłodzka river,
- backfilling the old bed of Duna stream and Duna Dolna stream (including backfilling under the dam) on a total length of approx. 960 m; backfilling the bed of Duna Górna stream on a length of approx. 375 m,
- development of a new approx. 275 m long outflow bed downstream of the dam, protected with rip-rap,
- development of a rubble catcher within the reservoir basin (surface area: 0.95 ha) with inflow beds.

2.4 Works in the reservoir basin and in the vicinity of the basin

- collection of local materials for the construction of the dam body on a surface area of approx. 6.36 ha,
- development of bank trims made of rip-rap on the concave curves of Duna stream, Duna Górna stream and Duna Dolna stream within the reservoir basin,
- connection of utilities (electrical energy, water) to the location of the utility backyard building next to the dam,
- construction of a visual monitoring system,
- construction of asphalt access roads with a total length of approx. 700 m,
- construction of asphalt access roads and gravel service roads within the reservoir basin (approx. 4.5 km) as well as a car park made of cobblestones next to the backyard building; water discharge from the car park – through a separator to a ditch along the service road and then to the stream; water discharge from the ditches along the asphalt access road – through channels to Duna Górna stream,
- greenery stubbing (with consideration for the conditions defined in the sentence of the decision),
- construction of a technical backyard utility building for the dam together with: connecting the automatic control; a water pipeline with an infiltration intake; and waste-water discharge to a holding tank,
- construction of a telecommunication connection to the backyard building,
- reconstruction of an underground telecommunication line of TP S.A. on the junction with Duna stream downstream of the dam,
- construction of a 20 kV power cable line to supply the backyard building and the dam devices, together with a transformer station,
- replacement of 2 posts and replacement of cables on an approx. 260 m long section of the existing overhead 20 kV line,

- construction of low voltage power cable lines to supply the devices related to the dam and the road lighting,
- construction of telecommunication lines connecting the dam devices with the backyard building,
- installation of a permanent engine power pack,
- installation of a warning system in case of a dam breakdown,
- installation of a radio aerial on the backyard building.

[two stamps of the Regional Director for Environmental Protection in Wrocław
Michał Jęcz /illegible signature/]